Part-I

Class: B. Tech (Auto)

Course code & Course Title: EED431 Power System Operation and Control

Course Outcomes

	By the end of the course the student will be able to:
CO1	Explain the fundamental concept of reactive power and illustrate various methods of reactive power compensation.
CO2	Analyze the stability of power system using swing equation and equal area criteria.
CO3	Explain excitation System, types and illustrate the control and protective functions of it.
CO4	Discuss the Load frequency control mechanism of single area and two area system.
CO5	Calculate the distribution of load between two power plants and comment on the method of load dispatching for economic operation of such plants.
CO6	Discuss FACTS technology to improve AC transmission system performance

CO-PO/PSO Mapping

CO	PO 1	PO 2	PO 3	PO 4	PO7	PO 12	PSO1	PSO2	PSO3
CO1	2				2	1			1
CO2	2	2					1	1	
CO3	2				1	1		1	
CO4	1			1				1	
CO5	2	1		2				1	
CO6	2	2					1		
Average	2	1.6							
Mapping Strength	2	2							

Class: Final Year B.Tech (EE)(Autonomous)

Course: EED433 Electric Hybrid Vehicle

Course Outcomes

	By the end of the course the student will be able to:
CO1	Demonstrate the basic concepts of Conventional, Electric, Hybrid EV and state the impact of of conventional vehicles on the society and different types of drive train topologies
CO2	Demonstrate different configurations of electric and hybrid electric drive trains with power flow
CO3	Discuss the propulsion unit for electric and hybrid vehicles
CO4	Demonstrate BLDC drive systems and various communication protocols for EV
CO5	Compare various energy storage and EV charging systems
CO6	Demonstrate the breaking system for EV and EHV

CO-PO/PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO9	PO 12	PSO1	PSO2
CO1	3	3					1	1	1
CO2	3						1		1
CO3	3						1		1
CO4	3						1		1
CO5	3						1		1
CO6	3						1		1
Average	3						1	1	1
Mapping Strength	3						1	1	1

G.S. Mandal's

MAHARASHTRA INSTITUTE OF TECHNOLOGY
Chhatrapati Sambhajinagar
(An Autonomous Institute)
Department of Electrical Engineering

Class: Final Year B.Tech (EE)(Autonomous)

COURSE NAME-EED434 Switchgear and Protection

Course Outcomes

	By the end of the course the student will be able to:
CO 1	Summarize the need of protection systems and protective zones and basic terminologies pertaining to relays.
CO 2	Explain the relaying principles of numerical relays used for differential relays, directional relays, impedance relays, admittance relays
CO 3	Explain the construction , working and application of Oil circuit breakers, SF6 Circuit breakers and vacuum circuit breakers and HRC fuses.
CO 4	Identify appropriate protection scheme for transmission lines.
CO 5	Select appropriate protection scheme for transformers and alternators
CO 6	Demonstrate the basic principles and applications of current transformers and voltage transformers.

CO-PO/PSO Mapping

COs	PO1	PO2	PO3	PO4	PO12	PSO1	PSO2	PSO3
CO1	3				1	1		
CO2		1			1		1	
CO3	3				1	1		
CO4				1	1			1
CO5				1	1			1
CO6	3				1	1		
Mapping	3	1		1	1	1	1	1

Class: Final Year (EE)

Course: EED438 Testing & Maintenance

Course Outcome

	By the end of the course the student will be able to:
CO1	Explain different types of testing, methods of testing and maintenance etc
CO2	Understand comprehensive testing techniques of electrical equipment's .
CO3	Explain troubleshooting and maintenance of household appliances
CO4	Gain knowledge of analysis tools and their response
CO5	Classify substation and explain substation layout study , earthing in detail
CO6	To perform different testing methods like megger testing, resistance testing, turns ratio test

CO-PO/PSO Mapping

CO	PO1	PO2	PO3	PO5	PO6	PO11	PO12	PSO1	PSO2
CO1	2							2	2
CO2		2						2	2
CO3		2						2	2
CO4	2							2	2
CO5					2			2	2
CO6	2							2	2
Average	2	2			2			2	2
Mapping Strength	2.0	2.0			2			2.0	2.0

Class: Final Year (EE)

Course: EED 439 Battery Management Systems

Course Outcome

	By the end of the course the student will be able to:
CO1	**Define** the parameters of BMS (Remember)
CO2	**Explain** the terms used in BMS (Understand)
CO3	**Describe** the BMS requirement (Apply)
CO4	**Use** of algorithm for BMS (Apply)

CO-PO/PSO Mapping

CO	PO1	PO2	PO3	PO 5	PO6	PO7	PO 12	PSO1	PSO2	PSO3
CO1	2						2	1		
CO2	2				1		1	1		
CO3	2	2	2		2	1		1		
CO4	2	1		2						1
Average	2	1.5	2	2	1.5	1	1.5	3		1
Mapping Strength	2	1.5	2	2	1.5	1	1.5	3		1

Class: Final Year (EE)

Course: EED 441 Energy Conservation and Audit

Course Outcome

	By the end of the course the student will be able to:
CO1	Define the terms for energy conservation (Remember)
CO2	Describe the Methodology in audit (Understand)
CO3	Explain Energy Efficiency in various Electrical Systems (Understand)
CO4	Illustrate the terms used in Energy Economics (Apply)

CO-PO/PSO Mapping

CO	PO 1	PO 2	PO 3	PO 4	PO 6	PO 7	PSO1	PSO2	PSO3
CO1	2		2		2	2	1		
CO2		2						1	
CO3	2		2		2	2	1		
CO4	2	2		2			2		
Average	2	2	2	2	2	2	1.3	1	
Mapping Strength	2	2	2	2	2	2	1.3	1	

Course Name: Photovoltaic System Design (OE V)

Class: Final Year B.Tech-EE (Autonomous) 2024-25

Course Outcomes

	By the end of the course the student will be able to:
CO1	Understand the basics of sources of energy
CO2	Justify the most adequate PV system architecture based on the specific requirements
CO3	Analyse the effect of atmospheric conditions on solar panels.
CO4	Calculate the energy received from Sun at various conditions.
CO5	Understand the basics of Battery and its sizing for PV.
CO6	Develop the MPPT Algorithms for grid interfacing

CO-PO/PSO Mapping

Course Outcomes												
Program Outcomes												
	Engineering Knowledge	Problem Analysis	Design/ Development of Solution	Conduct Investigation of complex problem	Modern Tool usage	The Engineer and Society	Environment and Sustanability	Ethics	Individual and team work	Communication	Project Management And inance	Life Long learning
CO1	2					1	1					
CO2	2	2		1	1							1
CO3	2	1					1					1
CO4	2	2										1
CO5	2											
CO6	2		3		1							1